Joint Electricity Regulatory Commission (JERC) for the UT of Jammu & Kashmir and the UT of Ladakh

Suo-motu Petition No.: JERC/ 1 of 2022

In the matter of:

1. Determination of levellised generic Renewable Energy (RE) tariff for FY 2022-23 under regulation 7(1) of (Terms and conditions for tariff determination from renewable energy sources) regulations, 2019 of the JERC for the state of Goa and UTs.

2. Determination of pre-fixed levellised tariff under component-A of the Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM-KUSUM) scheme.

3. Determination of generic tariff for the procurement of the unadjusted net credited units of electricity at the end of each financial year from rooftop solar PV projects under netmetering arrangement in accordance with (Solar PV grid interactive system based on Net metering) Regulations 2019 of the Joint Electricity Regulatory Commission of the state of Goa and UTs

August 2022

Joint Electricity Regulatory Commission for the UT of Jammu & Kashmir and the UT of Ladakh
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Before

The Joint Electricity Regulatory Commission for the UT of Jammu & Kashmir and the UT of Ladakh

Suo-motu Petition No.: JERC/ 1 of 2022

In the Matter of:

1. Determination of levellised generic tariff for renewable energy-based power projects for FY 2022-23 under Regulation 7(1) of (Terms and conditions for tariff determination from renewable energy sources) Regulations, 2019 of the JERC for the State of Goa and UTs.

2. Determination of pre-fixed levellised tariff for procurement of power from solar PV projects set up under component-A of the Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM-KUSUM) Scheme.

3. Determination of generic tariff for procurement of the unadjusted net credited units of electricity at the end of each financial year from rooftop solar PV projects under netmetering arrangement in accordance with (Solar PV grid interactive system based on Net metering) Regulations 2019 of the Joint Electricity Regulatory Commission of the State of
Goa and UTs

Order No.: JERC/1 of 2022

Dated - 05/08/2022

Preamble

In exercise of the powers conferred under Sections 61(a), (h) and (i), 62 (1) (a), and 86 (1) (a), (b), and e of the Electricity Act, 2003, and all other powers enabling it in this behalf, the Joint Electricity Regulatory Commission (JERC) for the UT of Jammu & Kashmir and the UT of Ladakh (JERC J&K and Ladakh or 'the Commission') determines the

i) Generic levellised tariff for procurement of power by the distribution licensees from renewable energy-based power projects set up / to be set up during FY 2022-23.

renewable energy-based power projects set up / to be set up during FY 2022-23.

ii) Pre-fixed indicative generic levellised tariff for procurement of power by the distribution licensees from Solar PV projects set up/ to be set up under component- A of the PM-KUSUM scheme during FY 2022-23.

iii) Generic levellised / feed-in tariff for procurement of the unadjusted net credited units of electricity at the end of each financial year from rooftop Solar PV projects under net-metering arrangement during FY 2022-23.

Procedural History

1. The commission has adopted the 'Terms and Conditions for Tariff Determination from Renewable Energy Sources' Regulations, 2019 by the JERC for the State of Goa and UTs (here in after referred to as 'RE Tariff Regulations 2019') along with a set of other regulations as per the JERC for UT of J&K and UT of Ladakh (Adoption of various Regulations of JERC for the state of Goa and UTs) Regulations, 2021 dated 31st March 2021. The commission has adopted various regulations of JERC for the state of Goa and UTs with amendments up to date for one year from the date of gazette notification i.e. 4th August 2021 or till the replacement of corresponding regulations by the commission.
2. Clause (1) of regulation 7 of the RE Tariff Regulations, 2019 provides that "The generic tariff shall be determined by the commission, under the said regulations, for the following types of projects:

(1) Solar PV;

(2) Wind energy based projects;

(3) Small hydro based projects

Provided that, in case of special circumstances, the project developer may approach the commission for determination of project specific tariff for above types of projects: Provided further that the generic tariff determined by the commission through a generic tariff order shall exclude the impact of capital subsidy:

Provided also, that in case any project, under the above types of projects, avails government subsidy, the project developer shall approach the commission for determination of project specific tariff:

Project Specific Tariff, on case to case basis, shall be determined by the Commission for the following types of projects: (1) Solar Thermal; (2) Biomass Power Projects based on Rankine cycle Technology; (3) Biomass Gasifier based projects; (4) Biogas based projects; (5) Municipal Solid Waste, Refuse Derived Fuel based projects with Rankine cycle technology and plasma gasification as approved by MNRE; (6) Tidal power projects; (7) Solar PV with/without battery bank (Hybrid or Stand-alone); (8) Solar and Wind Hybrid; (9) Any other Renewable Energy technology as approved by MNRE.

Determination of Project specific tariff for generation of electricity from such Renewable Energy sources shall be in accordance with such terms and conditions as stipulated under relevant Orders of the Commission Provided that the Financial and Operational norms except capital costs, operation and maintenance (O&M) expenses and capacity utilization factor or plant load factor (as applicable) as may be specified in these Regulations would be the ceiling norms suitably adjusted for subsidy amount (if any), while determining the Project Specific Tariff.

3. Regulation 9.1 of the RE tariff regulations 2019 provides that the commission shall determine the generic tariff at the beginning of each year of the control period for the identified renewable energy projects to be commissioned in that year.
4. The commission, in due discharge of the mandate under regulation 9.1 of the RE Tariff Regulations 2019 proposed the levellised generic tariff for procurement of power by the distribution licensees from RE based power projects (wind, small hydro and solar PV) in the UT of J&K and the UT of Ladakh during FY 2022-23 as **elaborated in Part –I of the suo-motu petition registered as case No JERC/ 1 of 2022**.
5. The Government of India (GoI) launched the PM-KUSUM scheme comprising three components viz (i) Component A: Setting up of 10,000 MW of decentralized grid-connected renewable energy power plants on barren land (ii) Component B: Installation of 17.50 lakh stand-alone solar agriculture pumps, (iii) Solarisation of 10 lakh grid-connected agriculture pumps.

As per the implementation guidelines of component - A of PM-KUSUM scheme, individual farmers/ group of farmers/ cooperatives/ panchayats/ Farmer Producer Organisations (FPOs)/Water User associations (WUAs) preferably within 5 KM radius of the sub-station of the local distribution company (DISCOM) are allowed to set up solar or other renewable energy based power plants (REPP) of 0.5 MW to 2 MW capacity. Power generated from such plants will be purchased by DISCOMs at a pre-fixed levellised tariff. In case, the aggregate capacity offered by the applicants is more than the notified capacity for a particular sub-station, bidding route will be followed by the DISCOM to select renewable power generator and in such case, the pre-fixed levellised tariff shall act as the ceiling tariff for bidding. Selection of bidders will be based on the lowest tariff offered in the ascending order as quoted by the bidders in the closed bid or e-reverse auction as the case may be.

In order to encourage the eligible project proponents to set up projects under the PM-KUSUM scheme, the Commission in exercise of the powers vested in it under Sections 62(1) read with 86(1)(a), (b), & (e) of the Electricity Act, 2003, has proposed a pre-fixed levellised indicative tariff for the procurement of power by the distribution licensees as elaborated in **Part –II of the suo-motu petition registered as case No JERC/ 1 of 2022.**

6. The commission has adopted (Solar PV grid interactive system based on net metering) Regulations 2019 of the JERC for the state of Goa and UTs for encouraging the eligible consumers to set up grid-interactive roof top solar PV plants in the UT of J&K and UT of Ladakh. Regulation 11.3 of the said regulation provides that the unadjusted net credited units of electricity at the end of each financial year shall be considered as units purchased by the distribution licensee at the average power purchase cost of the concerned distribution licensee **or** at the feed-in-tariff determined for that year (without considering subsidy and accelerated depreciation), whichever is lower.

   In exercise of the powers vested under the sections 62(1) read with 86(1)(a), (b), & (e) of the Electricity Act, 2003, the Commission has proposed the feed-in tariff for purchase of unadjusted units generated by roof top solar PV projects by the distribution licensees during FY 2022-23. The same is discussed in **Part –III of the of the suo-motu petition registered as case No. JERC/ 1 of 2022.**

7. **Suo-motu petition Case No JERC /1 of 2022** was uploaded on the website of the commission for inviting comments/objections/suggestions from the stakeholders. A public notice DIP/ J-421 –P/22 in this regard was also published by the commission in leading

daily newspapers namely, the Daily Excelsior, Hind Samachar and Amar Ujala **on 29.04.2022** (Jammu) and Roshani, and Tameel -e- Irshad, Afaaq on 28.04.2022 and 29.04.2022 (for Kashmir Region), respectively inviting comments/objections/suggestions from the stakeholders within 21 days from the date of the publication of the notice.

Public hearings

8. In order to maintain transparency in the process, the commission involved the stakeholders by initiating a public consultation process to gather stakeholder views on various aspects of the suo-motu petition case No JERC/ 1 of 2022. Accordingly, the public hearings on the suo-motu petition were held at Jammu, Srinagar and Leh as per the details provided in the following table:

Place of Hearing	Date	Venue
Jammu	02.06.2022	Conference Hall, PWD Guest House, Gandhi Nagar, Jammu
Srinagar	04.06.2022	IMPA Building, Residency Road , Srinagar.
Leh	21.06.2022	Conference Hall , DC Office , Leh

The list of stakeholders who attended the public hearing is enclosed as **Annexure A.**

9. The Commission has carefully gone through the comments/objections/suggestions received during and before the public hearings and the same has been duly considered while finalizing this order in the matter of (i) determination of generic levellised RE tariff for FY 2022-23 (ii) determination of pre-fixed levellised tariff under component-A of the PM-KUSUM scheme (iii) determination of generic tariff for procurement of unadjusted net credited units of electricity at the end of each financial year from solar PV projects under net-metering arrangement.

Approved generic levellised tariffs for renewable energy sources for FY 2022-23

10. The approved generic levellised tariff for renewable energy technologies (Solar PV, Wind & SHP) for FY 2022-23 is summarized in the following table.

Sl. No.	Renewable Energy Projects	Levellised Tariff
1.	**Wind Power Projects**	
	UT of Jammu and Kashmir	Rs 5.40/kWh (without AD) Rs 4.90/kWh (with AD)
	UT of Ladakh	Rs 6.74/kWh (without AD)

Sl. No.	Renewable Energy Projects	Levellised Tariff
		Rs 6.15/kWh (with AD)
2.	**Small Hydro Power Projects**	
	UT of Jammu and Kashmir	Rs 4.69/kWh (without AD) Rs 4.30/kWh (with AD)
	UT of Ladakh	Rs 4.93/kWh (without AD) Rs 4.54/kWh (with AD)
3.	**Solar PV Power Projects**	
	UT of Jammu and Kashmir	Rs 5.14/kWh (without AD) Rs 4.67/kWh (with AD)
	UT of Ladakh	Rs 6.47/kWh (without AD) Rs 5.90/kWh (with AD)

11. The approved pre-fixed levellised tariff for procurement of power from Solar PV projects set up under component – A of the PM-KUSUM scheme is provided in table below:

Approved pre-fix levellised tariff under PM-KUSUM for FY 2022-23	Rs 4.90 /kWh (Without AD benefit) Rs 4.48 / kWh (With AD benefit)

12. The approved generic levellised tariff for purchase of the unadjusted net credited units of electricity at the end of each financial year from the roof top solar PV projects set up under net-metering arrangement.is provided in table below.

Approved feed-in tariff for purchase of the unadjusted net credited units of electricity at the end of each financial year from the roof top solar PV projects set up under Net metering arrangement	Up to 10KW – Rs 5.53/kWh
	10KW-100 KW – Rs5.16/kWh
	Above 100 KW – Rs 4.84/Kwh

13. This order does not take into account the impact of capital subsidy offered to the RE projects. In case the project developer avails capital subsidy from state/ central government for the type of RE projects covered in this order, the project developer shall approach the Commission for determination of project specific tariff.

Applicability of the Order

14. The generic levellised tariff approved by the Commission for various RE technologies (Solar PV, SHP, Wind) shall be applicable for the RE projects commissioned during FY 2022-23. The tariff shall remain constant up to the life of the project.

15. The pre-fixed generic levellised tariff approved by the Commission for procurement of power from solar PV projects set up under component – A of the PM-KUSUM scheme is a celling tariff for FY 2022-23. The Commission shall adopt the tariff discovered through competitive bidding in case the nodal agency for implementation of PM-KUSUM conducts transparent competitive bidding as per section 63 of the Electricity Act.

16. The generic levellised tariff / feed-in tariff approved by the commission for purchase of the unadjusted net credited units of electricity at the end of each financial year from the roof top solar PV projects by the distribution licensees shall be applicable for FY 2022-23. The distribution licensee shall be obliged to purchase the unadjusted net credited units of electricity at the end of each financial year at the average power purchase cost or at the generic tariff approved by the Commission, whichever is lower.

17. The determination and basis of approval of generic levellised tariff has been explained in ensuring Chapters of this Tariff Order.

18. The Tariff approved by the Commission herewith, remain in force unless amended or modified by an Order of the Commission.

(Mohammad Rafi Andrabi)	**(Ajay Gupta)**	**(Lokesh D. Jha)**
MEMBER - Finance	**MEMBER - Technical**	**CHAIRMAN**

Date 05 August, 2022

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CHAPTER 1

Comments /Suggestions on proposed tariff framework for procurement of power from renewable energy-based power projects and Commission's views

(a) Normative parameters for tariff determination

1.1. Tariff design

RE Tariff Regulations, 2019 stipulate that generic tariff shall be determined on levellised basis. Levellisation is to be carried out for the 'useful life' of the renewable energy project. The tariff for renewable energy technologies shall be a single-part tariff consisting of the following fixed cost components:

a) Operation and maintenance expenses;

b) Interest on loan capital;

c) Depreciation;

d) Interest on working capital;

e) Return on equity:

Provided that for renewable energy technologies like biomass power projects having fuel cost component, single-part tariff with two components: fixed cost component and fuel cost component shall be determined by the Commission.

Considering the above regulatory provisions, the Commission in the suo-motu petition proposed to determine single-part levellised tariff on cost-plus basis for the RE technologies viz Solar PV, Wind and Small hydro.

Comments / suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to determine single-part levellised tariff on cost-plus basis consisting of fixed cost components over the useful life of the plant. The solar PV, wind and SHP based

project owner/generator shall be allowed to recover the fixed cost on the basis of actual energy generation as per the levellised tariff specified by the commission.

1.2. Useful Life

The Commission has proposed the useful life for solar PV, wind and SHP technologies in line with the sub-regulations 2.4(44) of the adopted RE Tariff Regulations 2019 as given in table below:

Table 1:Useful life of RE projects

	RE technology	Useful life in years
1	Solar PV	25
2	Wind	25
3	Small hydro	35

Comments / suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to consider the useful life in relation to the units of generating plants based on Solar PV, Wind and SHP technologies as proposed in the suo-motu petition in line with the provisions in the adopted RE Tariff Regulations 2019.

1.3. Control period

The Commission vide JERC for the UT of J&K and the UT of Ladakh (Adoption of various Regulations of JERC for the state of Goa and UTs) Regulations, 2021 dated 31st March 2021 (gazette notification of 4th August 2021) adopted a set of 18 regulations including the RE tariff regulations of the JERC for the state of Goa and UTs with a proviso that the adopted regulations shall remain valid up to the date of one year or till new regulations are framed by the Commission. Accordingly, the Commission proposed to determine the generic levellised tariff for the RE based power projects for FY 2022-23.

Comments / Suggestions

M/s Khari Hydro Power Project Pvt Ltd in their submission requested the Commission to clarify as to which regulations are applicable for determination of generic tariff for RE technologies (specifically small hydro plant in the "Below 5MW" category) from FY 2022-23 onwards. The objector also requested the Commission to clarify on how the tariff for RE technology projects (Small hydro plant in the "Below 5MW" category) commissioned in the FY 2020-21, will be determined.

Commission's view

The present proceedings initiated by the Commission through the suo-motu petition is for the determination of generic tariff for RE technologies for FY 2022-23. From FY 2022-23 onwards, the Commission may determine the tariff as per its own RE tariff regulations that may be formulated in the future. With regard to determination of tariff for SHP projects commissioned during FY 2020-21, as elaborated in the suo-motu petition, the tariff specified by erstwhile JKSERC (Terms and conditions for tariff determination from renewable energy sources) regulations, 2013 dated 17.05.2013 shall be applicable.

1.4. Tariff period

The Commission in the suo-motu petition proposes the tariff period in accordance with Regulation 6 of the adopted RE Tariff Regulations 2019 as given below

"The tariff period for renewable energy power projects will be as per their useful life as defined in regulation 2.4 (44)."

Tariff period under these regulations shall be considered from the date of commercial operation of the respective renewable energy generating plants. Tariff determined as per these regulations shall be applicable for renewable energy power projects for the entire duration of the tariff period.

Comments / Suggestions

The Commission has not received any comments /suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to retain the tariff period as specified in suo-motu petition in line with regulation 6 of the adopted RE Tariff Regulations 2019.

1.5. Debt-equity ratio

The Commission in the suo-motu petition proposed debt-equity ratio of 70:30, provided that if the equity actually deployed is less than 30% (thirty percent), the actual equity shall be considered, and if the equity actually deployed is more than 30 % (thirty percent), the equity in excess of 30 % (thirty percent) shall be treated as normative loan.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's View

The provisions for debt-equity ratio proposed in the suo-motu petition are in line with the tariff policy 2016 and the adopted RE tariff regulations 2019. The Commission decides to retain the same for the purpose of tariff determination for FY 2022-23.

1.6. Interest on loan and working capital

The Commission in the suo-motu petition has proposed the interest on loan and interest on working capital in accordance with the provisions under regulations 15.1, 15.2 and regulation 18 of the adopted RE Tariff Regulations 2019.

The loan tenure of 12 years has been proposed for tariff determination purpose and the normative interest rate on loan was proposed to be linked with SBI marginal cost of funds based lending rate (MCLR) (one-year tenor) as provided in the table below:

Table 2: Normative interest rate on loan capital

Particulars	Interest Rates
UT of J&K	SBI MCLR (one-year tenor) prevalent during the last available six months + 300 basis points
UT of Ladakh	SBI MCLR (one-year tenor) prevalent during the last available six months + 300 basis points

Accordingly, as per prevailing SBI MCLR rate during Sept 2021 to Feb 2022, the Commission proposed the interest rate for loan as provided in the table below:

Table 3:Proposed normative interest rate

Jurisdiction	Interest rate
UT of J&K	10%
UT of Ladakh	10%

Regulation 18 of the adopted RE Tariff Regulations 2019 specifies the working capital requirements in respect of wind power projects, small hydro power, solar PV projects as per the following:

a) Operation & maintenance expenses for one month;

b) Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative capacity utilization factor (CUF / PLF) as applicable;

c) Maintenance spares @ 15% of operation and maintenance expenses

Regulations 18.3 of the adopted RE Tariff Regulations 2019 specifies normative rate of interest on working capital in terms of SBI MCLR (one-year tenor) prevalent during the last available six months + 400 basis points for mainland and island areas. Accordingly, as per prevailing SBI MCLR rate during Sept 2021 to Feb 2022, the Commission proposed the interest on working capital as provided in table below:

Table 4:Proposed interest on working capital

Jurisdiction	Interest rates
UT of J&K	11%
UT of Ladakh	11%

Comments / Suggestions

M/s Khari Hydro Power Project Pvt Ltd urged the Commission to reconsider the normative interest rates on loan capital, for FY 2022-23 for the U.T. of J&K, to be specified as:

'SBI MCLR (one-year tenor) + 300 basis points' instead of 'SBI MCLR (one-year tenor) prevalent during the last available six months + 300 basis points' for the purpose of determination of tariff for FY 2022-23.

The normative interest rates on working capital, for FY 2022-23 for the UT of J&K, to be specified as 'SBI MCLR (one-year tenor) + 400 basis points' instead of 'SBI MCLR (one-year tenor) prevalent during the last available six months + 400 basis points' for the purpose of determination of tariff for FY 2022-23.

Commission's view

Specifying normative interest rate for loan and interest rate for working capital based on SBI MCLR (one-year tenor) prevalent during the last available six months is a standard practice followed by SERCs across many other state & UTs. Same methodology has also been specified in the adopted RE Tariff Regulations 2019.

In view of above, the Commission decides to follow the standardized methodology for specifying the interest rate on loan and working capital. The Commission considers the latest available SBI MCLR prevalent during the last available six months to consider the interest rates for the purpose of tariff determination for FY 2022-23 as per calculations given in the tables below:

Table 5:SBI MCLR (one-year tenor) prevalent during the last six months

Period	SBI MCLR (one-year tenor)
15.06.2022	**7.40**
15.05.2022	**7.20**
15.04.2022	**7.10**
15.03.2022	**7.0**
15.02.2022	**7.0**
15.01.2022	**7.0**
Average for last available six months	**7.11**

In view of above, the Commission decides to consider the interest on loan and Interest on working capital for the purpose of tariff determination for FY 2022-23 as specified below:

Table 6:Normative interest rate on loan for FY 2022-23

Jurisdiction	Interest rate
UT of J&K	7.11 + 300 basis point = 10.11%
UT of Ladakh	7.11 + 300 basis point =10.11%

Table 7:Normative interest rate on working capital for FY 2022-23

Jurisdiction	Interest rate
UT of J&K	7.11 + 400 basis point = 11.11%
UT of Ladakh	7.11 + 400 basis point =11.11%

1.7. Discount factor

The Commission in the suo-motu petition considered the discount factor for levellised tariff calculation as equal to the post-tax weighted average cost of capital on the basis of normative debt: equity ratio (70:30) as specified in the adopted RE Tariff Regulations 2019 under the sub-regulation (1) of regulation 14.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

Interest rate considered for the loan component (i.e.70% of capital cost) is 10.11%. For the equity component (i.e. 30% of capital cost) rate of Return on Equity (RoE) is considered at pre-tax RoE of 16%. Thus, the discount factor derived by this method for all technologies is 9.40%. [{10.11% ×0.70× (1 – 34.94%)} + {16.0% × 0.30}]. (Income tax rate @ % =% IT rate+ % surcharge + % health and education cess).

1.8. Depreciation

The commission in the suo-motu petition has computed the depreciation as per the methodology specified in regulation 16 of the adopted RE Tariff Regulations 2019.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

Commission decides to follow the methodology specified in Regulation 16 of the adopted RE Tariff Regulations 2019 for computation of depreciation.

1.9. Return on equity.

The Commission in the suo-motu petition has proposed to adopt return on equity of 16% for renewable energy projects in the UT of Jammu & Kashmir and the UT of Ladakh to be grossed up by prevailing Minimum Alternate Tax (MAT) rate as on 1st April of the available year at the time of determination of tariff

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to consider a return on equity of 16% for renewable energy projects in the UT of Jammu & Kashmir and the UT of Ladakh to be grossed up with applicable tax /cess for the purpose of tariff determination.

(b) Technology-specific capital cost and generation norms for RE technologies

1. Solar PV projects

1.10. Capital costs

In the suo-motu petition, the commission has specified normative capital cost for solar PV projects based on the provisions under regulation 35.1 of the adopted RE Tariff Regulations 2019.

Table: Proposed normative capital cost for solar PV projects

Jurisdiction	Capital cost
Solar PV projects in the UT of J&K	Rs. 5.00 Cr/MW (without capital Subsidy)
Solar PV projects in the UT of Ladakh	Rs. 6.00 Cr/MW (without capital Subsidy)

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission has decided to consider the normative capital cost as per the RE tariff Regulations as proposed in the SuoMotu petition. The capital cost norms for solar PV projects for FY 2022-23 as provided below:

Table 8:Normative capital cost for solar PV projects for FY 2022-23

Jurisdiction	Capital cost*
Solar PV Projects in the UT of J&K	Rs. 5.00 Cr/MW
Solar PV Projects in the UT of Ladakh	Rs. 6.00 Cr/MW

1.11. Operation & maintenance expenses.

In the Suo-motu petition, the Commission has proposed the operation and maintenance (O & M) expenses as 1.5% and 2% of the capital cost of solar PV projects in UT of J&K and UT of Ladakh, respectively. The proposal was in line with the provisions in regulation 37.1 of the adopted RE Tariff Regulations, 2019. Further, in accordance with the regulation 20.3 of the

adopted regulation, the Commission proposed an annual escalation rate of 4.67% for determination of O&M expenses for subsequent years

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to specify the normative O&M expenses for solar PV projects for FY 2022-23 as provided in table below:

Table 9:Proposed normative O&M expenses for solar PV projects for FY 2022-23

Jurisdiction	O&M expenses for FY 2022-23 (Rs lakh/MW)
UT of J&K	7.5
UT of Ladakh	12.00

The Commission decides to adopt the annual escalation rate of 4.67% for the determination of O&M expenses for subsequent years.

1.12. Capacity Utilization Factor (CUF)

The Commission, in the suo-motu tariff petition, proposed a normative CUF of 18% for solar PV projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh. The normative CUF proposed was as per the provisions under regulation 36.1 of the adopted RE Tariff Regulations, 2019.

Comments / Suggestions

One of the objector M/S Talib Hussain Chashti, contractor, R/o Village Noona Bandi, Tehsil Haveli, District Poonch, submitted that the normative CUF for Solar PV projects should be considered as 15%.

Commission's view

The Commission has noted that the CUF is dependent on plant performance, grid availability and the DC:AC ratio. In the absence of operational data on solar PV plants in the UT of J&K and Ladakh, the Commission relies on the annual energy generation estimates based on the simulation analysis conducted using the METEONORM database and PV Syst software. The

simulation analysis has been conducted for a typical 1 MW plant at 5 to 6 representative sites in the UT of Jammu & Kashmir and the UT of Ladakh.

Based on the above exercise and considering the mandate of the Commission to promote efficiency in operation, it is felt that a normative CUF of 18% for solar PV projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh is reasonable and hence the Commission has decided to consider the same for tariff determination during PY 2022-23

1.13. Auxiliary consumption.

The Commission, in the suo-motu petition, has considered auxiliary consumption of 0.25% of gross generation as per regulation 31(1) of the adopted RE tariff Regulations 2019

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission has decided to consider normative auxiliary consumption of 0.25% of the gross generation for the purpose of Tariff determination during FY 2022-23.

2. Wind power projects

1.14. Capital costs

In the suo-motu petition the Commission has specified normative capital cost for wind power projects for the UT of J&K and the UT of Ladakh as provided in table below. The normative capital cost proposed was based on the provisions under regulation 26.2 of the adopted RE Tariff Regulations, 2019.

Table 10:Proposed normative capital cost for wind power projects

Jurisdiction	Capital Cost
UT of J&K	Rs. 5.25 Cr/MW (without capital subsidy)
UT of Ladakh	Rs. 6.25 Cr/MW (without capital subsidy)

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission has decided to retain the normative capital cost for wind power project as proposed in the suo-motu petition for determination of tariff for FY 2022-23.

1.15. Operation & maintenance expenses.

In the suo-motu petition, the Commission has proposed the operation and maintenance (O & M) expenses as 1.5% of the capital cost and 2% of the capital cost of wind power projects in the UT of J&K and UT of Ladakh, respectively. The proposal was in line with the provisions in regulation 37.1 of the adopted RE Regulations, 2019.

In line with the regulation 28(1) of the adopted regulation, the Commission proposed an annual escalation rate of 4.67% for determination of O&M expenses for subsequent years

Table 11:Proposed normative O&M expenses for wind power projects for FY 2022-23

Jurisdiction	O&M expenses for FY 2022-23 (Rs lakh/MW)
UT of J&K	7.87
UT of Ladakh	12.50

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decided to retain the O&M expenses as proposed in the suo-motu tariff petition:

Table 12:Proposed normative O&M expenses for wind power projects for FY 2022-23

Jurisdiction	O&M expenses FY 2022-23 (Rs lakh/MW)
UT of J&K	7.87
UT of Ladakh	12.50

The Commission also decides to adopt the annual escalation rate of 4.67% for determination of O&M expenses for subsequent years for tariff determination.

1.16. Capacity Utilization Factor (CUF).

The Commission, in the suo-motu tariff petition, proposed a normative CUF of 18% for wind power projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh. The normative CUF proposed was as per the provisions under regulation 27(1) of the adopted RE Tariff Regulations 2019.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decided to consider normative CUF of 18% for the purpose of Tariff determination during FY 2022-23.

1.17. Auxiliary Consumption.

The Commission, in suo-motu petition, has considered auxiliary consumption as 0.25% of gross generation as per regulation 29(1) of the adopted RE tariff Regulations, 2019.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decided to consider normative auxiliary consumption of 0.25% of the gross generation for the purpose of tariff determination during FY 2022-23.

3. Small hydro power projects

1.18. Capital cost

The Commission, as per the provisions under regulation 30.1 of the adopted RE Tariff Regulations, 2019, proposed normative capital cost for small hydro projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh as specified in table below:

Table 13:Normative capital cost of small hydro projects for FY 2022-23 for the UT of J & K

Project capacity	Capital cost
Small hydro plant below 5 MW capacity	Rs. 7.79 Crore/MW
Small hydro plant - 5 MW up to 25 MW capacity	Rs. 7.07 Crore/MW

Table 14:Normative capital cost for small hydro projects for FY 2022-23 for the UT of Ladakh

Project capacity	Capital cost
Small hydro plant below 5 MW capacity	Rs. 10.50 Crore/MW
Small hydro plant - 5 MW up to 25 MW capacity	Rs. 9 Crore/MW

Comments / Suggestions

M/s Khari Hydro Power Project Pvt Ltd submitted that due to the increase in cost of cement, steel, copper, fuel, the construction costs in the U.T. of Jammu and Kashmir for a small hydro plant in the 'below 5MW' category exceeds Rs. 1100 lakhs/MW. The objector further pointed out that the erstwhile JKSERC, in its tariff order dated 21.04.2016. had considered a capital cost of Rs. 798.41 Lacs/MW for tariff determination. The petitioner further pointed out that the capital cost for small hydro plant adopted by the "CERC" in its FY 2020- 21' and 'FY 2021-22' RE tariff order is Rs 11 Cr/MW.

The objector further pointed out that the capital cost considered by the CERC is commensurate with the prevailing market costs for setting up a small hydro plant in the category of "Below 5 MW" in "Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States". The objector urged the Commission to reconsider the capital cost for small hydro plants in the "Below 5MW" category, and revise the benchmark capital cost to Rs. 1100 Lacs/MW, in line with the CERC regulation.

Commission's view

The Commission acknowledges that the capital cost is one of the most important parameters for SHP tariff determination. The cost of a small hydro projects is site-specific and depends on the terrain conditions and the layout of SHP scheme (run-of-river, dam-foot based, canal-based scheme). In a cost-plus approach, the benchmark capital cost fixed for tariff determination needs to represent the costs of the type of SHP schemes envisaged to be developed in future. Benchmark pricing approach typically adopts a representative SHP station for tariff determination. The topographical features of the UT of Jammu & Kashmir and the UT of Ladakh is amenable to the development of the run-of-the-river type of schemes. The

Commission further acknowledges that the terrain conditions are comparatively difficult and prone to geological surprises which may result in increased costs compared to normal terrain conditions.

The Commission notes that the CERC in RE tariff order for FY 2021-22 has recommended a normative capital cost benchmark of Rs 11 Cr/MW for the SHP projects "below 5 MW" capacity and the projects in "5-25 MW capacity range" to be set up in Himachal Pradesh, Uttarakhand, West Bengal, UT of Jammu and Kashmir, UT of Ladakh and North Eastern States.

In view of above, the Commission decides to follow the CERC's capital cost benchmark for the purpose of tariff determination for FY 2022-23 and specifies normative capital cost for the SHP projects as given in table below:

Table 15:NormativecCapital cost for small hydro projects for FY 2022-23 (UT of J & K and UT of Ladakh)

Project Capacity	Capital Cost
Small Hydro Plant below 5 MW capacity	Rs. 11 Crore/MW
Small Hydro Plant - 5 MW up to 25 MW capacity	Rs. 11 Crore/MW

1.19. Capacity Utilization Factor (CUF)

The Commission, in the suo-motu petition, proposed a normative capacity utilization factor (CUF) of 30% in accordance with regulation 30(1) of the adopted RE Tariff Regulations, 2019 for small hydro projects.

Comments / Suggestions

M/s Khari Hydro Power Project Pvt Ltd suggested that the CUF/PLF proposed for small hydro projects in the UT of Jammu and Kashmir be considered as 45% instead of the proposed CUF of 30%. The objector further submitted that the erstwhile JKSERC in its tariff order dated 21.04.2016 had adopted normative CUF of 45%. Similarly, the CERC, in its FY 2021-22 RE tariff order has considered normative CUF of 45% for SHP in the UT of Jammu and Kashmir. The objector requested that the "Hon'ble Commission may reconsider the CUF as 45% for small hydro plant in the category of 'Below 5 MW'.

Commission's view

The Commission noted that the CERC in RE tariff order FY 2021-22 specifies the norms for Capacity Utilization Factor (CUF) of units generated in a year in respect of the small hydro

projects as 45% for Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States.

In view of above, the Commission decides to consider ae normative CUF of 45% for small hydro projects in the UT of Jammu & Kashmir and the UT of Ladakh during FY 2022-23.

1.20. Operation & maintenance expenses

In the suo-motu petition, the Commission has proposed the operation and maintenance (O & M) expenses as 2% and 2.5% of the capital cost of SHP projects in UT of J&K and UT of Ladakh, respectively. The proposal was in line with the provisions in regulation 33(1) of the adopted RE Regulations, 2019.

Further, in line with the regulation 20.3 of the adopted regulation, the Commission proposed an annual escalation rate of 4.67% for determination of O&M expenses for subsequent years.

Table 16:Normative O&M expenses proposed for SHP projects for FY 2022-23

Jurisdiction	O&M expenses FY 2022-23 (Rs lakh/MW)	
	Capacity below 5 MW	Capacity 5 - 25 MW
UT of J&K	15.58	14.14
UT of Ladakh	26.25	22.50

Comments / Suggestions

M/s Khari Hydro Power Project Pvt Ltd submitted that the operation and maintenance expenses adopted by the erstwhile JKSERC vide its tariff order dated 21.04.2016 was Rs. 29.54 Lakh/MW in the category 'Below 5MW' with an escalation of 5.72% per annum over the tariff period. Considering inflation and the prevailing market costs, the operation and maintenance expenses proposed for FY 2022-23 ought not to be less than the amount adopted by the erstwhile JKSERC during FY 2016-17. The objector urged the Commission to reconsider the operation and maintenance expenses as Rs. 43.38 Lakh/MW, as adopted by the CERC vide CERC RE tariff order FY 2021-22.

Commission's view

In view of the revised normative capital cost benchmark for SHP projects recommended for FY 2022-23, the Commission decides to specify the O&M expenses for SHP projects for FY 2022-23 as provided in table below:

Table 17:Proposed Normative O&M expenses for Solar PV projects for FY 2022-23

Jurisdiction	O&M expenses FY 2022-23 (Rs lakh/MW)
UT of J&K	22
UT of Ladakh	27.5

The commission decides to adopt the annual escalation rate of 4.67% for the determination of O&M expenses for subsequent years for tariff determination.

1.21. Auxiliary consumption

The commission, in the suo-motu petition, has considered auxiliary consumption of 1% of gross generation as per regulation 32(1) of the adopted RE Tariff Regulations 2019.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to consider normative auxiliary consumption of 1% of the gross generation for the purpose of tariff determination during FY 2022-23

1.22. Subsidy or incentive by the central / state government

Regulation 24 of the adopted RE Tariff Regulations 2019 specifies that the Commission shall take into consideration any incentive or subsidy offered by the central or the state government, including accelerated depreciation benefit, if availed by the generating company while determining the tariff under these regulations:

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed,

i) Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate as per relevant provisions under Income Tax Act and the corporate income tax rate;

ii) Capitalization of RE project during second-half of the fiscal year;

iii) Per unit benefit shall be derived on levellised basis at a discount factor equivalent to the weighted average cost of capital;

In terms of the above regulation, as per the current provisions under Income Tax Act, RE project owners can avail accelerated depreciation at the rate of 40% in the first year on a written-

down value (WDV) basis. In addition to this 40%, an additional depreciation of 20% in the initial year is extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (iia) of the Income Tax Act, 1961. With this proviso, the projects can avail 60% depreciation in the first year of commissioning. From the second year onwards, depreciation at the rate of 40% on WDV is available.

Following principles shall be adopted for ascertaining the income tax benefit on account of accelerated or additional depreciation for the purpose of tariff determination:

a. The assessment of benefit shall be based on normative capital cost, book depreciation rate of 5.28% per annum, accelerated/ additional depreciation rate (i.e., 60% in the first year and 40% from Second year onwards) as per the relevant provisions of the Income Tax Act and the corporate income tax rate.

b. The capitalization of RE projects for the full financial year;

c. The per-unit benefit shall be derived on levellised basis at a discounting factor equivalent to the post-tax weighted average cost of capital.

1.23. Treatment for subsidy offer by central / state government

As provided in regulation 7.1 of the adopted RE Tariff Regulations 2019, the generic tariff determined by the Commission through a generic tariff order shall exclude the impact of capital subsidy; provided that in case any project under the above types of projects, avails government subsidy, the project developer shall approach the Commission for determination of project-specific tariff: Provided also that financial and operational norms except capital cost, O&M expenses and capacity utilization factor or plant load factor (as applicable) as specified in these regulations would act as the ceiling norms while determining the project-specific tariff.

Comments / Suggestions

The Commission has not received any comments / suggestions from the stakeholders in this regard.

Commission's view

The Commission decides to adopt the methodology as proposed above to factor in the subsidy/incentive offered by the state /central government.

Pursuant to the aforementioned discussion and the normative technical and financial parameters, the Commission determines the technology-specific generic levellised tariff for the solar PV, wind and small hydro projects for FY 2022-23 as given below:

Table 18:Normative operational and financial parameters for tariff determination

Sn	Particulars	Unit	Wind projects		SHP projects		Solar projects	
			UT of J &K	UT of Ladakh	UT of J &K	UT of Ladakh	UT of J &K	UT of Ladakh
1	Capital Cost	Rs Lakhs/MW	525	625	1100	1100	500	600
2	Capacity Utilization Factor	%	18	18	450	45	18	18
3	Interest on term loan	%	10.11	10.11	10.11	10.11	10.11	10.11
4	Loan repayment period	Years	12	12	12	12	12	12
5	Debt	%	70	70	70	70	70	70
6	Equity	%	30	30	30	30	30	30
7	Moratorium period	Years	0	0	0	0	0	0
8	Discount rate	%	9.40	9.40	9.40	9.40	9.40	9.40
9	O&M costs	Rs lakhs/MW	7.88	12.50	22.00	27.50	7.50	12.00
10	O&M escalation rate	%	4.67	4.67	4.67	4.67	4.67	4.67
11	Return on equity (pre-tax)	%	16	16	16	16	16	16
12	Interest on working capital	%	11.11	11.11	11.11	11.11	11.11	11.11
13	Corporate tax rate	%	34.94	34.94	34.94	34.94	34.94	34.94
14	MAT	%	17.47	17.47	17.47	17.47	17.47	17.47

The Commission determines the generic levellised tariff for wind power, small hydro and solar PV projects for FY 2022-23 as given below.

Table 19:Generic levellised RE tariff for FY 2022-23

Sl. No.	Renewable energy projects	Levellised tariff	Tariff computation sheet
1.	Wind power projects		
	UT of Jammu and Kashmir	Rs 5.40/kWh (without AD) Rs 4.90/kWh (with AD)	Annexure 1
	UT of Ladakh	Rs 6.74/kWh (without AD) Rs 6.15/kWh (with AD)	Annexure 2

Sl. No.	Renewable energy projects	Levellised tariff	Tariff computation sheet
2.	**Small hydro power projects**		
	UT of Jammu and Kashmir	Rs 4.69/kWh (without AD) Rs 4.30/kWh (with AD)	Annexure 3
	UT of Ladakh	Rs 4.93/kWh (without AD) Rs 4.54/kWh (with AD)	Annexure 4
3.	**Solar PV power projects**		
	UT of Jammu and Kashmir	Rs 5.14/kWh (without AD) Rs 4.67/kWh (with AD)	Annexure 5
	UT of Ladakh	Rs 6.47/kWh (without AD) Rs 5.90/kWh (with AD)	Annexure 6

CHAPTER 2

Comments /Suggestions on proposed tariff framework for solar PV projects under the PM-KUSUM scheme and Commission's views

Under component-A of the PM_KUSUSM scheme, solar or other renewable energy-based power plants (REPP) of capacity 500 kW to 2 MW can be setup by individual farmers/ group of farmers/ cooperatives/ panchayats/ Farmer Producer Organisations (FPO)/Water User associations (WUA) hereinafter called Renewable Power Generator (RPG). (States/DISCOMs may also allow setting-up of solar or other renewable energy-based power plants of capacity less than 500 kW in specific cases.) The REPP will be preferably installed within five km radius of identified grid sub-stations in order to avoid high cost of sub- transmission lines and reduce transmission losses.

i) The distribution companies (DISCOMs) will notify sub-station wise surplus capacity which can be fed from such REPP to the grid and shall invite applications from interested beneficiaries for setting up the REPP. The renewable power generated will be purchased by DISCOMs at a pre-fixed levellised tariff. In case, the aggregate capacity offered by applicants is more than the notified capacity for a particular sub-station, bidding route will be followed by DISCOMs to select the renewable power generators and in such cases, the pre-fixed levellised tariff will be considered as the ceiling tariff for bidding. Selection of bidders will be based on the lowest tariffs offered in the ascending order as quoted by the bidders in the closed bid or e-reverse auction, as the case may be. A model PPA (Power Purchase Agreement) to be executed between the RPG and the DISCOMs has been prepared by MNRE. The duration of PPA will be 25 years from Commercial Operation Date (COD) of the project. The total energy purchased from these RE plants will be accounted for the fulfilment of RPO by the DISCOM.

   In case the farmers/ group of farmers/ cooperatives/ panchayats/ Farmer Producer Organizations (FPO)/ Water User associations (WUA) etc. are not able to arrange equity required for setting up the REPP, they can opt for developing the REPP through developer(s) or even through local DISCOM, which will be considered as RPG in this case. In such a case, the land owner will get lease rent as mutually agreed between the parties. The lease rent may be in terms of Rs per year per acre of land or in terms of Rs per unit energy generated per acre of land area. The farmer(s) may opt for payment of lease rent

directly in their bank account by the DISCOM, deducted from the payment dues to the developer. A model land lease agreement to facilitate the beneficiaries has also been prepared by MNRE. However, the final terms of land lease agreement may be finalized based on mutual consent of concerned parties.

ii) The REPP under the scheme would be implemented primarily on barren / uncultivable land. The RPG would be free to adopt any renewable energy source or technology while responding to the bid. Agricultural land is also permitted under the scheme provided that solar plants are installed in stilt fashion (i.e. raised structure for installation of solar panels) and with adequate spacing between panel rows for ensuring that farming activity is not affected. In such a case, DISCOM may also float bids (in case of specific substations) where setting up of solar projects on stilts may be mandatorily required, and bids for energy tariff invited accordingly.

iii) The DISCOM shall assess and notify RE generation capacity that can be injected into all 33/11 kV or 66/11 kV or 110/11 kV sub-stations of rural areas and place such notification on its website for information of all stakeholders. To facilitate farmers willing to lease out land for REPP near the notified substation(s), the DISCOM may also place the list of such interested farmers on its website. However, the leasing of land will be a bi-lateral agreement between the farmer and the developer and DISCOM will not be responsible for land lease related issues. To meet additional demand, the DISCOM will also take initiatives to augment the capacity of sub-station under IPDS or any other scheme.

iv) The DISCOM or any agency authorized by the DISCOM shall invite 33/11 kV or 66/11 kV or 110/11 kV sub-station wise Expression of Interest (EoI) from RPGs to participate in selection process for development of decentralized renewable power plants. The RPG shall submit their interest against the EoI as per the schedule notified by the DISCOM. An RPG will not be allowed to apply for more than one REPP for a particular 33/11 kV sub-station.

v) REPP of capacity up to 2 MW may be connected at 11 kV side of sub-stations and the selected RPG will be responsible for laying of dedicated 11 kV line from the REPP to the sub-station, the construction of bay and related switchgear at the sub-station where the plant is connected to the grid and metering is done.

vi) A copy of standard power purchase agreement to be executed between the DISCOM and the RPG shall be provided by DISCOM along with invitation for submission of EoI. The model PPA agreement shall be as provided by MNRE.

vii) The PPA shall be for a period of 25 years from the date of COD. The DISCOM will be obliged to buy the entire power from RPG within the contract capacity. MNRE will provide Procurement Based Incentive (PBI) to the DISCOMs @ 40 paise/kWh or Rs.6.60 lakhs/MW/year, whichever is lower, for buying solar/ other renewable power under this scheme. The PBI will be given to the DISCOMs for a period of five years from the COD of the plant. Therefore, the total effective PBI that shall be payable to DISCOMs will be Rs. 33 Lakh per MW. The total energy purchased from these RE plants will be accounted for the fulfilment of RPO by the DISCOM.

Normative parameters for tariff determination

2.1. Capital cost

The Commission, in the suo-motu petition, proposed a normative benchmark cost of Rs 3.42 Cr/MW for the solar PV projects of capacity ranging from 500 kW to 2 MW to be set up under component A of the PM-KUSUM scheme in the UT of Jammu & Kashmir and the UT of Ladakh. The benchmark capital cost proposed by the Commission was based on the study of the capital cost norms fixed by the other state electricity regulatory commissions in their recent tariff orders notified during 2019-2021.

Comments / Suggestions

JKEDA, the nodal agency for the promotion and development of RE projects in the UT of Jammu & Kashmir submitted that the present costs for development of solar projects have increased manifold post 1st April,2022 with the imposition of following duties: basic customs duty on solar cells to 25%, basic customs duty on assembled solar modules to 40%, and GST increase on solar products from 5% to 12%.

JKEDA further submitted that the solar project developers/renewable energy generators (RPGs) informed JKEDA that the present cost for development of solar energy projects works out to Rs 4.5 crores per MW for tier-1 equipment with 13.8% average GST. JKEDA further opined that in a recent competitive bidding process conducted by the nodal agency for selection of project developer for setting up of solar PV projects under PM-KUSUM scheme, a capital cost of Rs 4.5 Cr/MW (including the taxes and duties) was discovered.

Another objector M/S Talib Hussain Chashti contractor, R/o Village, Noona Bandi, Tehsil Haveli, District Poonch echoed the same concern with regard to the capital cost of solar PV projects and submitted that the normative capital cost of solar PV plant under PM-KUSUM - component A, shall be considered as Rs.5.0 Crore per Megawatt (Rs.5.0 Cr./MW) and

applicable average GST as per latest guidelines is 13.80%o divided in two slabs of GST i.e., 12% GST on solar module and solar inverter, and 18% GST on Balance of System (BOS) like junction boxes, mounting structures, cables, etc.

Few other project developers, in their oral submission made during the public hearing conducted at Jammu, Srinagar and Leh, urged the Commission for upward revision of normative capital cost in view of the changes in the GST structure and the customs duty.

Commission's view

While arriving at the tariff for component-A, the Commission has considered the cost adopted by other SERCs as provided in table below:

Capital cost considered by various SERCs for PM-Kusum component A		
SERC	**Order Date**	**Capital Cost Rs lacs/MW**
Madhya Pradesh	16.02.2021	335
Tamil Nadu	02.01.2021	360
Jharkhand	30.09.2020	340
Punjab	09.10.2020	340
Chhattisgarh	13.09.2021	335
Haryana	20.12.2019	340

The Commission noted that, since mid-2020, the solar module prices (mono PERC) in the global market increased by ~42% from August 2020 to November 2021. During the same period, solar module prices (mono PERC) in India also increased by ~40%. The Commission observed that from 1.10.2021, the GST payable on components of solar PV projects was increased from 5% to 12%. The Commission also noted that from April 2022 onwards, basic customs duty (BCD) is applied on import of solar modules (40%) and cells (25%). Additionally, government also mandated solar developers to only use approved list of models and manufacturers (ALMM) enlisted modules for government projects, government-assisted projects, those under government schemes and programs (e.g., component A of the PM-KUSUM scheme).

The Commission has also reviewed the capital cost benchmark for Solar PV projects considered by the SERCs in recent tariff orders notified during FY 2021-22 and FY 2022-23 which capture the changes in capital cost due to the escalation of PV module cost and the changes in tax and duty structure

Name of SERC	Tariff order details	Capital cost / MW
Uttarakhand	Suo-motu petition 12 of 2022 dated 04.05.2022	372 Lakh/MW
Himachal Pradesh	Suo-motu petition No 07/2022 dated 28.03.2022	Rs 425 Lakh/MW for projects between 1-5 MW Rs 432 Lakh/MW for projects up to 1 MW

The Commission also noted that, as provided under the scheme, in case the aggregate capacity offered by applicant is more than notified capacity for a particular substation, the pre-fixed levellised tariff will only act as ceiling tariff for bidding. In all such cases, the tariff determined by the Commission will only act as the ceiling tariff. Further, the DISCOMS have been granted liberty to file suitable petitions for re-determination of levellised cost/tariff, if need be.

In view of above, and considering the submission made by the nodal agency JKEDA, the Commission decides to consider the normative capital cost of Rs 4.5 Cr/MW for setting up the solar PV projects under the PM-KUSUM scheme during FY 2022-23. The break-up of cost components is provided in the table below:

Table 20:Break-up of cost components under the PM-KUSUM scheme

ITEM	COST/MWp
SUPPLY BLOCK	
Solar PV Modules	2,60,00,000.00
Module Mounting Structure (MMS)	32,00,000.00
Solar Inverter	25,00,000.00
Cabling (DC & AC)	15,00,000.00
Earthing & Lightning	5,00,000.00
Electrical Items - Panels (LV & HV)	7,00,000.00
Transformer & Transmission Line	11,00,000.00
Material for Civil Works	25,00,000.00
Switchyard, Protection Panel, Metering	5,00,000.00
SERVICE BLOCK	
Civil Works - Service Charge	4,00,000.00
Mechanical & Electrical Works - Service Charge	4,00,000.00
Project Management & Design	3,00,000.00
Sub-Total	**3,96,00,000.00**
GST (Avg. 13.80%)	54,64,800.00
Total	**4,50,64,800.00**

2.2 Capacity Utilization Factor (CUF)

The Commission in the suo-motu tariff petition proposed a normative CUF of 18% for solar PV projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh. The normative CUF proposed was as per the provisions under regulation36.1 of the adopted RE Tariff Regulations, 2019.

Comments / Suggestions

JKEDA in its submission mentioned that the normative CUF for solar PV projects should be fixed at 15% maximum for the UT of J&K. This is considering that even during peak hot dry summer, the yearly generation is not expected to exceed 12-15 lakh units in JAMMU region and 10-12 lakh units in the Kashmir region as per Annual Direct Normal Irradiance data of 4.84kwh/m2 in Jammu and 4.80 kwh/m2 in Srinagar and 4.98 kwh/m2 for Kargil and 6.90 kwh/m2 for Leh. The objector further submitted that J&K has multiple micro-climatic zones. The hilly areas are close to "cold and sunny" and "cold and cloudy" climatic zones, while some locations like Udhampur lie under sub-tropical climate. In addition, the plains of the J&K like Jammu, Akhnoor, Samba and Kathua lie in the composite zone.

One of the objectors, M/S Talib Hussain Chashti, contractor, R/o Village, Nona Bandi, Tehsil Haveli, submitted that the normative CUF for solar PV projects should be considered as 15%.

Commission's view

In the absence of actual generation data of the operational solar PV projects in the UT to ascertain possible generation from a typical solar PV plant, the Commission conducted simulation analysis using the METEONORM database and the PV Syst software. The simulation analysis has been conducted for representative sites in the UT of Jammu & Kashmir and the UT of Ladakh namely, Thrakalyal Dist Kathua and Raipur Dist Samba from Jammu Region, village Awantipura, Dist Pulwama and Pattan, Dist Baramulla from the Kashmir Region.

In view of above, the Commission feels that a normative CUF of 18% for solar PV projects to be set up in the UT of Jammu & Kashmir and the UT of Ladakh is reasonable and hence the Commission decides to consider the same for tariff determination purpose during FY 2022-23.

2.3 Other operational parameters

The Commission in the suo-motu petition proposed to consider the technical and financial parameter specified for utility scale grid-connected solar PV projects for determination of pre-

fixed levellised tariff for generation of electricity under component-A of the PM-KUSUM scheme.

Comments / Suggestions

The Commission has not received any comments /suggestion from the stakeholders on normative parameters other than the capital cost and the CUF.

Commission's view

The Commission decided to keep the other normative technical and financial parameters unchanged.

Pursuant to the aforementioned discussion and the normative technical and financial parameters, the Commission proposes the following normative operational and financial parameters for tariff determination for solar PV projects set up under the PM-KUSUM scheme during FY 2022-23

Table 21:Normative operational and financial parameters for tariff determination

SN	Particulars	Unit	Value
1	Capital cost	Rs lakh/MW	455
2	Capacity Utilization Factor	%	18
3	Interest on term loan	%	10.11
4	Loan repayment period	Years	12
5	Debt	%	70
6	Equity	%	30
7	Repayment period	Years	12
8	Moratorium period	Years	0
9	Discount rate	%	9.40
10	O&M costs	% of CC	2
11	O&M escalation rate	%	4.67
12	Return on Equity (pre-tax)	%	16
13	Interest on working capital	%	11.11
14	Corporate tax rate	%	34.94
15	MAT	%	17.47

Based on the proposed norms, the Commission proposes the pre- fixed levellised tariff of **Rs. 4. 90/kWh (without AD benefit) and Rs 4.48/kWh (With AD benefit)**. The computations of the same have been enclosed in **Annexure- 7.**

CHAPTER 3

Comments /Suggestions on proposed tariff framework for roof top solar PV projects to be set up under adopted net-metering regulations and Commission's views

The Commission has adopted the 'Solar PV grid-interactive system based on net-metering Regulations, 2019' of the JERC for the state of Goa and UTs. Regulation 11.3 of the said regulation provides that the unadjusted net credited units of electricity at the end of each financial year shall be considered as units purchased by the distribution licensee at the average power purchase cost of the concerned distribution licensee **or** at the feed –in-tariff determined for that year (without considering subsidy and accelerated depreciation), whichever is lower.

In exercise of powers vested under sections 62(1) read with 86(1)(a), (b), & (e) of the Electricity Act, 2003, the Commission has proposed the feed-in tariff for purchase of unadjusted units generated by roof top solar PV projects by the distribution licensees during FY 2022-23 in this part III of the suo-motu petition.

3.1 Capital cost

The Commission in the suo-motu petition has proposed the capital cost for different capacities of grid-connected rooftop solar PV systems for FY 2021-22 based on MNRE's administrative approval no. 32/24/2020-SPV Division dated 27.10.2021 as shown in the table below

Table 22:Benchmark costs for grid-connected rooftop solar PV systems for FY 2021-22

S.No.	System capacity	Benchmark cost (Rs/KW)	Capital cost with GST*
1	Up to 10 kW	45087	51309
2	>10 kW up to 100 kW	42056	47860
3	Above 100 kW	39467	44913

* Capital cost with GST calculated considering GST @12% on 70% of the benchmark cost (supply of component) and GST @ 18% on 30% of the benchmark cost (service component)

Comments / Suggestions

The Commission has not received any comments /suggestions from the stakeholders on the capital cost benchmark proposed by the Commission.

Commission's view

The Commission decides to retain the capital cost benchmark norms as proposed in the suo-motu petition.

3.2 Other operational parameters

The Commission in the suo-motu petition proposed to consider the technical and financial parameter specified for utility scale grid-connected solar PV projects for determination of pre-feed-in tariff for the purchase of unadjusted units generated by rooftop solar PV projects by the distribution licensees during FY 2022-23.

Comments / Suggestions

The Commission has not received any comments /suggestion from the stakeholders on the same.

Commission's view

The Commission decides to retain the operational and financial parameters as proposed in the suo-motu petition with slight changes for incorporating changes in the applicable interest rates.

Table 23:Normative operational and financial parameters for tariff determination

SN	Particulars	Unit	Value
1	Capital cost a. Up to 10 KW capacity b. >10 kW up to 100 kW c. above 100 KW	Rs /KW	 51309 47860 44913
2	Capacity Utilization Factor	%	18
3	Interest on term loan	%	10.11
4	Loan repayment period	Years	12
5	Debt	%	70
6	Equity	%	30
7	Repayment period	Years	12
8	Moratorium period	Years	0
9	Discount rate	%	9.40
10	O&M cost	% of CC	2
11	O&M escalation rate	%	4.67
12	Return on equity (pre-tax)	%	16
13	Interest on working capital	%	11.11
14	Corporate tax rate	%	34.94
15	MAT	%	17.47

Based on the above norms and considering the variation in the cost of solar PV projects based on the capacity of system, the Commission has specified separate feed-in / generic tariff for

procurement of energy generated from roof top solar projects up to 10 kW capacity, between 10kW to 100 kW and capacity beyond 100 kW capacity as provided in tables below:

A detailed computation sheet is enclosed as Annexure – 8.

Table 24:Feed-in tariff for procurement of unadjusted net credited units of the electricity from rooftop RE systems installed under net-metering arrangement for FY 2022-23

S. no.	System capacity	Capital cost including GST (Rs)	Tariff (Rs /kwh)
1	Up to 10 kW	45087	5.53
2	>10 kW up to 100 kW	42056	5.16
3	Above 100 kW	39467	4.84

Above feed-in/ generic levellised tariff shall be applicable for the roof top Solar PV capacity commissioned during FY 2022-23. As per the provisions under regulation 11.3 of adopted Solar PV grid interactive system based on Net Metering Regulations, 2019 of the JERC for the state of Goa and UTs, the unadjusted net credited units of electricity s at the end of each financial year shall be considered as units purchased by the distribution licensee at the average power purchase cost of the concerned distribution licensee or the feed –in tariff, whichever is lower. The distribution licensee shall make payment to consumer by purchase of the unadjusted net credited units of electricity at the end of each financial year so as to settle the account at end of financial year.

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ANNEXURE – A

List of officials and other stakeholders who attended the public hearing held at PWD guest house, Gandhi Nagar, Jammu on 02.06.2022

Sr No	Name	Designation	Organisation
		JERC Officials	
1	Lokesh D Jha	Hon'ble Chairman	JERC
2	Ajay Gupta	Hon'ble Member Technical	JERC
3	Mohammad Rafi Andrabi	Hon'ble Member Finance	JERC
4	V K Dhar	Secretary	JERC
5	Smt Raj Kumari Kundel	SE	JERC
6	Ghulam Nabi Mir	Addl Secretary Law	JERC
7	Rakesh Sharma	Ex Engineer	JERC
8	Navneet Mahajan	JE	JERC
9	Jaswinder Singh	JE	JERC
10	Abhimanyu Verma	St. Assist.	JERC
11	Surendra Pimparkhedkar	Sr Fellow	WISE
12	Satadru Chakraborty	Fellow	WISE
13	Utkarash Gautam	Senior Research Associate	WISE
14	Manish Ranjan	Senior Research Associate	WISE
		Other stakeholders	
15	D.P. Balgotra	Director	Sanji Surya
16	Sanjeev Saraf	MD	Khari Hydro Power Pvt Ltd
17	Abhishek Saraf	Director	Khari Hydro Power Pvt Ltd
18	Vipul Kishore	Manager	Sanji Surya
19	Naresh Kumar	Director	Arca Solar
20	Pranav Balrgotra	Senior Project Officer	GERMI , consultant to JKEDA
21	Amit Singh	Junior Engineer	JKEDA
22	Roop Lal Thapa	Director	Sanji Surya
23	Deleep Kumar cherwoo	Consultant	J K Electric Engineer Pvt Ltd
24	Arun Kumar		Sanji Surya

List of officials and other stakeholders who attended the public hearing held at IMPA Building, Srinagar, Kashmir on 04.06.2022

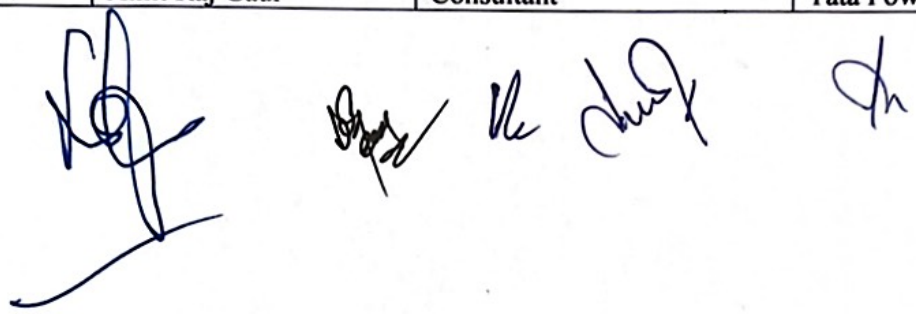
Sr No	Name	Designation	Organisation
		JERC Officials	
1	Lokesh D Jha	Hon'ble Chairman	JERC
2	Ajay Gupta	Hon'ble Member Technical	JERC
3	Mohammad Rafi Andrabi	Hon'ble Member Finance	JERC
4	V K Dhar	Secretary	JERC

Sr No	Name	Designation	Organisation
5	Ghulam Nabi Mir	Addl Secr. Law	JERC
6	Surendra Pimparkhedkar	Sr Fellow	WISE
7	Satadru Chakraborty	Fellow	WISE
	Other Stakeholders		
8	Syed Altaf Rizvi	Director	Raheeq Infratech Pvt Ltd
9	Nasir Hanam	Director	Constant Energy Properties Ltd

List of officials and other stakeholders who attended the public hearing held at Conference Hall, DC office, Leh on 21.06.2022

Sr No	Name	Designation	Organisation
	JERC Officials		
1	Lokesh D Jha	Hon'ble Chairman	JERC
2	Ajay Gupta	Hon'ble Member Technical	JERC
3	V K Dhar	Secretary	JERC
4	Ghulam Nabi Mir	Addl Secr. Law	JERC
5	Utkarsh Gautam	Senior Research Associate	WISE
	UT Government / LPDD officials		
6	Ravinder Kumar	Secretary, Power	UT Ladakh
7	G.A. Mir	CE PDD	UT Ladakh
8	Tawang Paljor	SE PDD	UT Ladakh
9	Kacho Ahmed Khan	Project Director	KREDA
10	Khalid Mehmud	Xen	JAKEDA
11	M A. Banka	Xen	JAKEDA
12	Anwar Husain	Xen	LPDD
13	Firoz Ahmed	Xen	LPDD
14	Mehnaz	JE STD	LPDD
15	Kunzang Dolma	JE STD	LPDD
16	Devendra Parihar		HQ CELZ
17	Major P Rajesh		HQ CELZ
18	Nanang Thinles		CII
19	Stanzin		IREDA
20	Tsering sangdup		LPDD
21	Aga Syed Ahmed		LPDD
22	Stanzin Tsundus	NA	Personal capacity
23	Stanzin Nangial	NA	Personal capacity
24	Rinchen Wangow	NA	Personal capacity
25	Arif Kakporz	NA	Personal capacity
26	Zulficar Ahmed	NA	Personal capacity
27	Mehar Ali	NA	Personal capacity
28	Stanzin Aodjioo	NA	Personal capacity
29	Chosy ing Dorjan	NA	Personal capacity
30	Ali Mussa	NA	Personal capacity
31	Mohd Iqabal	NA	Personal capacity

Sr No	Name	Designation	Organisation
		Other Stakeholders	
32	Rakesh Kumar Sood	Consultant	REC
33	Amit Raj Gaur	Consultant	Tata Power
34	Yogesh Kumar Luthra	Sr Consultant	RECPDCL
35	Santosh Chube	Consultant	Tata Power
36	Rakesh Kumar Sood	Consultant	REC
37	Amit Raj Gaur	Consultant	Tata Power



Part -I

PROPOSED LEVELLISED GENERIC TARIFF FOR VARIOUS RENEWABLE ENERGY TECHNOLOGIES FOR FY 2022-23.

Annexure - 1

WIND projects - Tariff calculations (UT of J & K)																									
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Net Energy sold (lakh kWhs)	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73
Costs																									
O&M	7.88	8.24	8.63	9.03	9.45	9.89	10.36	10.84	11.35	11.88	12.43	13.01	13.62	14.25	14.92	15.62	16.35	17.11	17.91	18.74	19.62	20.54	21.50	22.50	23.55
Depreciation	30.63	30.63	30.63	30.63	30.63	30.63	30.63	30.63	30.63	30.63	30.63	30.63	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08	8.08
Interest on term loan	35.61	32.51	29.41	26.32	23.22	20.13	17.03	13.93	10.84	7.74	4.64	1.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.18	2.14	2.10	2.06	2.02	1.98	1.94	1.91	1.87	1.84	1.80	1.77	1.35	1.37	1.40	1.44	1.47	1.50	1.54	1.58	1.62	1.66	1.70	1.75	1.79
Return on equity	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53
Total cost (Rs Lakh)	106.82	104.05	101.30	98.57	95.85	93.16	90.49	87.84	85.21	82.61	80.04	77.49	53.57	54.24	54.94	55.66	56.43	57.22	58.06	58.93	59.85	60.81	61.81	62.86	63.98
Energy charge (Rs /kWh)	6.79	6.62	6.44	6.27	6.09	5.92	5.75	5.58	5.42	5.25	5.09	4.93	3.41	3.45	3.49	3.54	3.59	3.64	3.69	3.75	3.81	3.87	3.93	4.00	4.07
Levellised energy charge calculations																									
Discount rate	9.40%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Levellised energy charge		
Levellised Energy Charge	5.40	Rs /kWh
AD benefit	0.50	Rs /kWh
Levellised energy charge after AD	4.90	Rs /kWh

Annexure - 2

WIND projects -Tariff calculations (UT of Ladakh)																									
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Net Energy sold (lakh kWhs)	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73
Costs																									
O&M	12.50	13.08	13.69	14.33	15.00	15.70	16.44	17.21	18.01	18.85	19.73	20.65	21.62	22.63	23.68	24.79	25.95	27.16	28.43	29.75	31.14	32.60	34.12	35.71	37.38
Depreciation	36.46	36.46	36.46	36.46	36.46	36.46	36.46	36.46	36.46	36.46	36.46	36.46	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62	9.62
Interest on term loan	42.39	38.70	35.02	31.33	27.64	23.96	20.27	16.59	12.90	9.21	5.53	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.74	2.70	2.65	2.61	2.57	2.54	2.50	2.47	2.43	2.40	2.37	2.34	1.85	1.89	1.94	1.99	2.04	2.10	2.15	2.21	2.28	2.34	2.41	2.48	2.56
Return on equity	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35	36.35
Total cost (Rs Lakh)	130.44	127.29	124.17	121.09	118.03	115.01	112.02	109.07	106.15	103.27	100.44	97.65	69.43	70.48	71.59	72.74	73.95	75.22	76.55	77.93	79.39	80.91	82.50	84.16	85.91
Energy charge (Rs /kWh)	8.29	8.09	7.89	7.70	7.50	7.31	7.12	6.93	6.75	6.57	6.39	6.21	4.41	4.48	4.55	4.62	4.70	4.78	4.87	4.95	5.05	5.14	5.25	5.35	5.46
Levellised energy charge calculations																									
Discount rate	9.40%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Levellised energy charge		
Levellised energy charge	6.74	Rs /kWh
AD benefit	0.59	Rs /kWh
Levellised energy charge after AD	6.15	Rs /kWh

Annexure - 3

Small hydro projects - Tariff calculations (UT of J & K)																								
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Net Energy sold (lakh kWhs)	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03
Costs																									
O&M	22.00	23.03	24.10	25.23	26.41	27.64	28.93	30.28	31.70	33.18	34.73	36.35	38.04	39.82	41.68	43.63	45.66	47.80	50.03	52.37	54.81	57.37	60.05	62.85	65.79
Depreciation	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57
Interest on term loan	74.60	68.12	61.63	55.14	48.65	42.17	35.68	29.19	22.71	16.22	9.73	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	4.82	4.74	4.67	4.60	4.53	4.46	4.40	4.34	4.28	4.22	4.17	4.12	3.11	3.19	3.27	3.36	3.46	3.55	3.65	3.76	3.87	3.99	4.11	4.23	4.37
Return on equity	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98
Total cost (Rs Lakh)	229.53	223.99	218.51	213.08	207.70	202.38	197.12	191.92	186.79	181.73	176.74	171.82	114.70	116.56	118.50	120.54	122.67	124.90	127.23	129.67	132.23	134.90	137.70	140.63	143.70
Energy charge (Rs /kWh)	5.88	5.74	5.60	5.46	5.32	5.19	5.05	4.92	4.79	4.66	4.53	4.40	2.94	2.99	3.04	3.09	3.14	3.20	3.26	3.32	3.39	3.46	3.53	3.60	3.68
Levellised energy charge calculations																									
Discount rate	9.35%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Annexure -3 continued

Small hydro projects - Tariff calculations (UT of J & K)										
Year	26	27	28	29	30	31	32	33	34	35
Net Energy sold (lakh kWhs)	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03
Costs										
O&M	68.86	72.08	75.44	78.97	82.65	86.51	90.55	94.78	99.21	103.84
Depreciation	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57
Interest on term loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	4.51	4.65	4.80	4.96	5.13	5.30	5.49	5.68	5.88	6.09
Return on equity	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98
Total cost (Rs Lakh)	**146.91**	**150.28**	**153.79**	**157.48**	**161.33**	**165.37**	**169.59**	**174.01**	**178.64**	**183.48**
Energy charge (Rs /kWh)	3.76	3.85	3.94	4.04	4.13	4.24	4.35	4.46	4.58	4.70
Levellised energy charge calculations										
Discount rate	9.40									
Discount factor	0.11	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05

Levellised energy charge		
Levellised energy charge	4.69	Rs /kWh
AD benefit	0.39	Rs /kWh
Levellised energy charge after AD	4.30	Rs /kWh

Annexure - 4

Small hydro projects - Tariff calculations (UT of Ladakh)																									
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Net Energy sold (lakh kWhs)	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03
Costs																									
O&M	27.50	28.78	30.13	31.54	33.01	34.55	36.16	37.85	39.62	41.47	43.41	45.43	47.56	49.78	52.10	54.53	57.08	59.75	62.54	65.46	68.51	71.71	75.06	78.57	82.24
Depreciation	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	64.13	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57
Interest on term loan	74.60	68.12	61.63	55.14	48.65	42.17	35.68	29.19	22.71	16.22	9.73	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	5.07	5.01	4.94	4.89	4.83	4.78	4.73	4.68	4.64	4.60	4.57	4.54	3.54	3.64	3.75	3.86	3.97	4.09	4.22	4.35	4.49	4.63	4.79	4.94	5.11
Return on equity	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98
Total cost (Rs Lakh)	**235.28**	**230.01**	**224.81**	**219.67**	**214.60**	**209.60**	**204.68**	**199.83**	**195.07**	**190.40**	**185.81**	**181.32**	**124.64**	**126.96**	**129.39**	**131.94**	**134.60**	**137.39**	**140.30**	**143.35**	**146.55**	**149.89**	**153.40**	**157.06**	**160.89**
Energy charge (Rs /kWh)	**6.03**	**5.89**	**5.76**	**5.63**	**5.50**	**5.37**	**5.24**	**5.12**	**5.00**	**4.88**	**4.76**	**4.65**	**3.19**	**3.25**	**3.32**	**3.38**	**3.45**	**3.52**	**3.60**	**3.67**	**3.76**	**3.84**	**3.93**	**4.02**	**4.12**
Levellised energy charge calculations																									
Discount rate	9.40%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Annexure -4 Continued

Small hydro projects - Tariff calculations (UT of Ladakh)										
Year	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Net Energy sold (lakh kWhs)	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03	39.03
Costs										
O&M	86.08	90.10	94.30	98.71	103.32	108.14	113.19	118.48	124.01	129.80
Depreciation	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57	9.57
Interest on term loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	5.28	5.47	5.66	5.86	6.07	6.28	6.51	6.75	7.00	7.26
Return on equity	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98	63.98
Total cost (Rs Lakh)	**164.91**	**169.11**	**173.51**	**178.11**	**182.93**	**187.97**	**193.25**	**198.78**	**204.56**	**210.62**
Energy charge (Rs /kWh)	**4.23**	**4.33**	**4.45**	**4.56**	**4.69**	**4.82**	**4.95**	**5.09**	**5.24**	**5.40**
Levellised energy charge calculations										
Discount rate										
Discount factor	0.11	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05

Levellised energy charge		
Levellised energy charge	4.93	**Rs /kWh**
AD benefit	0.39	**Rs /kWh**
Levellised energy charge after AD	4.54	**Rs /kWh**

Annexure - 5

Solar projects- Tariff calculations (UT of J & K)																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73
Costs																									
O&M	7.50	7.85	8.22	8.60	9.00	9.42	9.86	10.32	10.81	11.31	11.84	12.39	12.97	13.58	14.21	14.87	15.57	16.29	17.06	17.85	18.69	19.56	20.47	21.43	22.43
Depreciation	29.17	29.17	29.17	29.17	29.17	29.17	29.17	29.17	29.17	29.17	29.17	29.17	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69	7.69
Interest on term loan	33.91	30.96	28.01	25.06	22.12	19.17	16.22	13.27	10.32	7.37	4.42	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.08	2.04	2.00	1.96	1.92	1.89	1.85	1.82	1.78	1.75	1.72	1.69	1.28	1.31	1.34	1.37	1.40	1.43	1.47	1.50	1.54	1.58	1.62	1.66	1.71
Return on equity	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08	29.08
Total cost (Rs Lakh)	101.74	99.10	96.48	93.87	91.29	88.72	86.18	83.66	81.16	78.68	76.23	73.80	51.02	51.66	52.32	53.01	53.74	54.50	55.29	56.13	57.00	57.91	58.86	59.86	60.91
Energy charge (Rs /kWh)	6.47	6.30	6.13	5.97	5.80	5.64	5.48	5.32	5.16	5.00	4.85	4.69	3.24	3.28	3.33	3.37	3.42	3.46	3.52	3.57	3.62	3.68	3.74	3.81	3.87
Levellised energy charge calculations																									
Discount rate	9.40%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Levellised energy charge		
Levellised energy charge	5.14	Rs /kWh
AD benefit	0.47	Rs /kWh
Levellised energy charge after AD	4.67	Rs /kWh

Annexure - 6

Solar projects - Tariff calculations (UT of Ladakh)																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73
Costs																									
O&M	12.00	12.56	13.15	13.76	14.40	15.08	15.78	16.52	17.29	18.10	18.94	19.83	20.75	21.72	22.73	23.80	24.91	26.07	27.29	28.56	29.90	31.29	32.75	34.28	35.89
Depreciation	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23	9.23
Interest on term loan	40.69	37.15	33.62	30.08	26.54	23.00	19.46	15.92	12.38	8.85	5.31	1.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	2.63	2.59	2.55	2.51	2.47	2.44	2.40	2.37	2.34	2.30	2.28	2.25	1.77	1.82	1.86	1.91	1.96	2.01	2.07	2.13	2.19	2.25	2.32	2.38	2.46
Return on equity	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90	34.90
Total cost (Rs Lakh)	125.22	122.20	119.21	116.24	113.31	110.41	107.54	104.70	101.90	99.14	96.42	93.74	66.65	67.66	68.72	69.83	71.00	72.21	73.48	74.82	76.21	77.67	79.20	80.80	82.47
Energy charge (Rs /kWh)	7.96	7.77	7.58	7.39	7.20	7.02	6.84	6.66	6.48	6.30	6.13	5.96	4.24	4.30	4.37	4.44	4.51	4.59	4.67	4.76	4.85	4.94	5.04	5.14	5.24
Levellised energy charge calculations																									
Discount rate	9.40%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12

Levellised energy charge		
Levellised energy charge	6.47	Rs /kWh
AD benefit	0.57	Rs /kWh
Levellised energy charge after AD	5.90	Rs /kWh

Part – II

Suo-moto determination of pre-fixed levelised tariff under component-A of the Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM-KUSUM) scheme

Annexure - 7

Solar projects - Tariff calculations																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73	15.73
Costs																									
O&M	9.10	9.52	9.97	10.44	10.92	11.43	11.97	12.53	13.11	13.72	14.36	15.03	15.74	16.47	17.24	18.05	18.89	19.77	20.69	21.66	22.67	23.73	24.84	26.00	27.21
Depreciation	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Interest on term loan	30.86	28.18	25.49	22.81	20.13	17.44	14.76	12.08	9.39	6.71	4.03	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	1.99	1.96	1.93	1.90	1.87	1.85	1.82	1.79	1.77	1.75	1.73	1.71	1.34	1.38	1.41	1.45	1.49	1.53	1.57	1.61	1.66	1.71	1.76	1.81	1.86
Return on equity	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46	26.46
Total cost (Rs Lakh)	94.96	92.67	90.40	88.15	85.93	83.73	81.55	79.40	77.28	75.18	73.12	71.09	50.54	51.31	52.12	52.96	53.84	54.76	55.73	56.74	57.79	58.90	60.06	61.27	62.54
Energy charge (Rs /kWh)	6.04	5.89	5.75	5.60	5.46	5.32	5.18	5.05	4.91	4.78	4.65	4.52	3.21	3.26	3.31	3.37	3.42	3.48	3.54	3.61	3.67	3.74	3.82	3.90	3.98
Levellised energy charge calculations																									
Discount rate	9.35%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12
Levellised energy charge																									
Levellised energy charge								4.90				Rs /kWh													

Levellised fixed cost	4.90	Rs /kWh
AD benefit	0.43	Rs /kWh
Levellised fixed cost after AD	4.48	Rs /kWh

Part -III

Determination of feed-in / generic tariff for procurement unadjusted net credited units of electricity at the end of each financial year from roof top Solar PV projects under net-metering arrangement in accordance with the draft (Grid Interactive Renewable Energy system and its related matters) Regulations, 2022 of the Joint Electricity Regulatory Commission (JERC) for the UT of Jammu & Kashmir and the UT of Ladakh

Annexure - 8

Solar projects - Tariff calculations (up to 10 kW)																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Costs																									
O&M	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03
Depreciation	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Interest on term loan	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Return on equity	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Total cost (Rs Lakh)	**0.11**	**0.10**	**0.10**	**0.10**	**0.10**	**0.09**	**0.09**	**0.09**	**0.09**	**0.08**	**0.08**	**0.08**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**
Energy charge (Rs /kWh)	**6.81**	**6.64**	**6.48**	**6.32**	**6.16**	**6.00**	**5.85**	**5.69**	**5.54**	**5.39**	**5.24**	**5.10**	**3.62**	**3.68**	**3.74**	**3.80**	**3.86**	**3.93**	**4.00**	**4.07**	**4.14**	**4.22**	**4.31**	**4.39**	**4.48**
Levellised energy charge calculations																									
Discount rate	9.35 %																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12
Levellised energy charge																									
Levellised energy charge								5.53				Rs /kWh													

Solar projects - Tariff calculations (>10 kW up to 100 kW)																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Costs																									
O&M	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Depreciation	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Interest on term loan	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Return on equity	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Total cost (Rs Lakh)	**0.10**	**0.10**	**0.10**	**0.09**	**0.09**	**0.09**	**0.09**	**0.08**	**0.08**	**0.08**	**0.08**	**0.07**	**0.05**	**0.05**	**0.05**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.07**
Energy charge (Rs /kWh)	6.35	6.20	6.05	5.90	5.75	5.60	5.45	5.31	5.17	5.03	4.89	4.75	3.38	3.43	3.49	3.54	3.60	3.66	3.73	3.79	3.86	3.94	4.02	4.10	4.18
Levellised energy charge calculations																									
Discount rate	9.35%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12
Levellised energy charge																									
Levellised energy charge									5.16				Rs /kWh												

Solar projects- Tariff calculations (above 100kW)																									
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Net Energy sold (lakh kWhs)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Costs																									
O&M	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Depreciation	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Interest on term loan	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Return on equity	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Total cost (Rs Lakh)	**0.09**	**0.09**	**0.09**	**0.09**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.07**	**0.07**	**0.07**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
Energy charge (Rs /kWh)	5.96	5.81	5.67	5.53	5.39	5.25	5.12	4.98	4.85	4.72	4.59	4.46	3.17	3.22	3.27	3.32	3.38	3.44	3.50	3.56	3.63	3.70	3.77	3.84	3.92
Levellised energy charge calculations																									
Discount rate	9.35%																								
Discount factor	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12
Levellised energy charge																									
Levellised energy charge									4.84				Rs /kWh												